ABSTRACT

The Effect of Alkyl Group in Acetyl Chloride and Butanoyl Chloride on The Percentage of Ferulic Acid Esterification (Using Microwave Irradiation)

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4-acetoxy-3-methoxycinnamic acid was synthesized by reacting ferulic acid and acetyl chloride whereas 4-butoxy-3-methoxycinnamic acid was made from the reaction of ferulic acid and butanoyl chloride. This synthesis was carried through the substitution mechanism of nucleophilic acyl using microwave irradiation. The Optimum percentage in the synthesis of 4-acetoxy-3-methoxycinnamic acid was observed at 40 watt and 0,5 min.

In order to study the effect of alkyl group length to the percentage of ferulic acid esterification, acetyl chloride and butanoyl chloride were used as acyl halides in this research. The result show that the length of alkyl group in acetyl chloride and butanoyl chloride has no effect toward the percentage of ferulic acid esterification.

The characterization of 4-acetoxy-3-methoxycinnamic acid and 4-butoxy-3-methoxy cinnamic acid was performed using melting point test, UV-Vis spectrophotometry, FT-IR spectrophotometry, ^{1}H-NMR spectrometry. The synthetic percentage of 4-acetoxy-3-methoxycinnamic acid and 4-butoxy-3-methoxy cinnamic acid were found to be 95,04 % ± 1,70 and 66,37 % ± 4,34, respectively. Both of them show the optimum reaction at 40 watt and 0,5 min.

Keyword : 4-acetoxy-3-methoxycinnamic acid, 4-butoxy-3-methoxycinnamic acid, microwave irradiation, acetyl chloride, butanoyl chloride